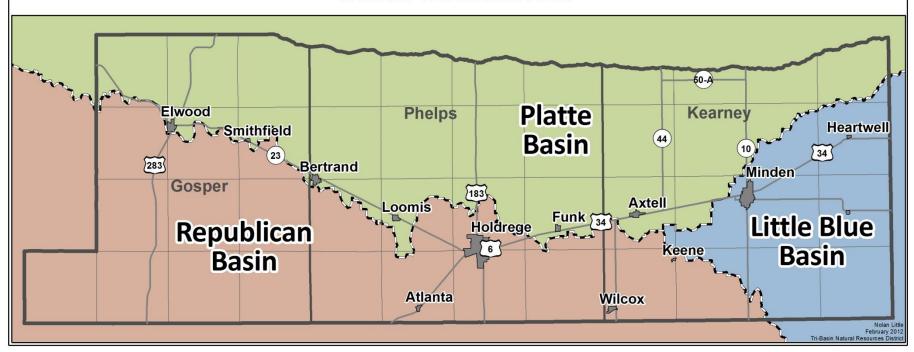


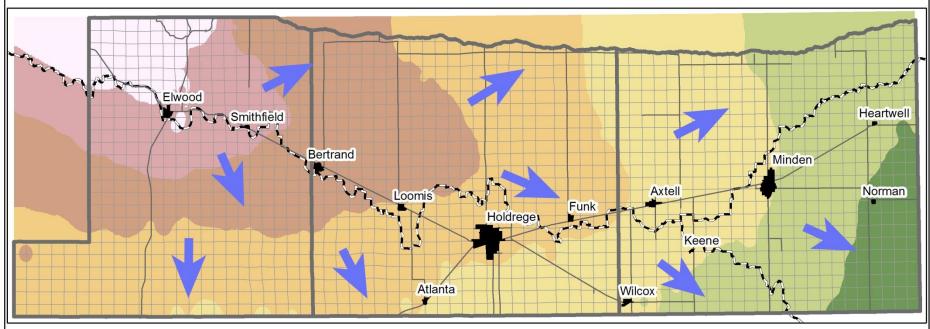
Tri-Basin NRD

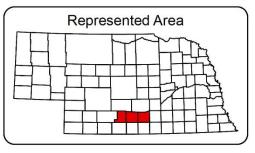
- Responsible for protecting soil and water resources of Gosper, Phelps and Kearney counties
- Governed by a 13-member board of directors
- District includes portions of Platte, Republican and Little Blue river basins

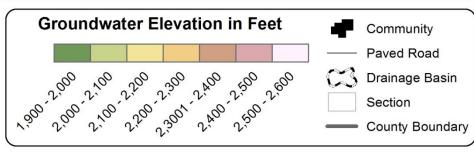
Tri-Basin Natural Resources District Basin Boundaries



Tri-Basin Natural Resources District Groundwater Elevation

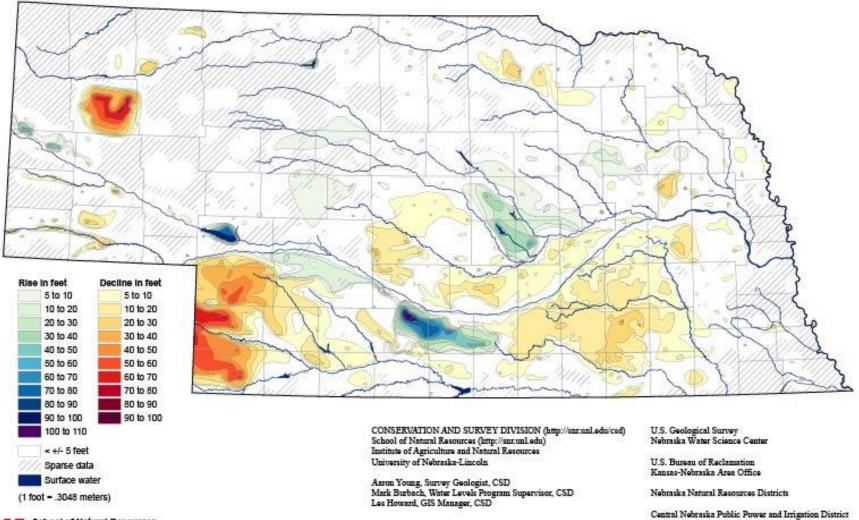








Groundwater-level Changes in Nebraska - Predevelopment to Spring 2014

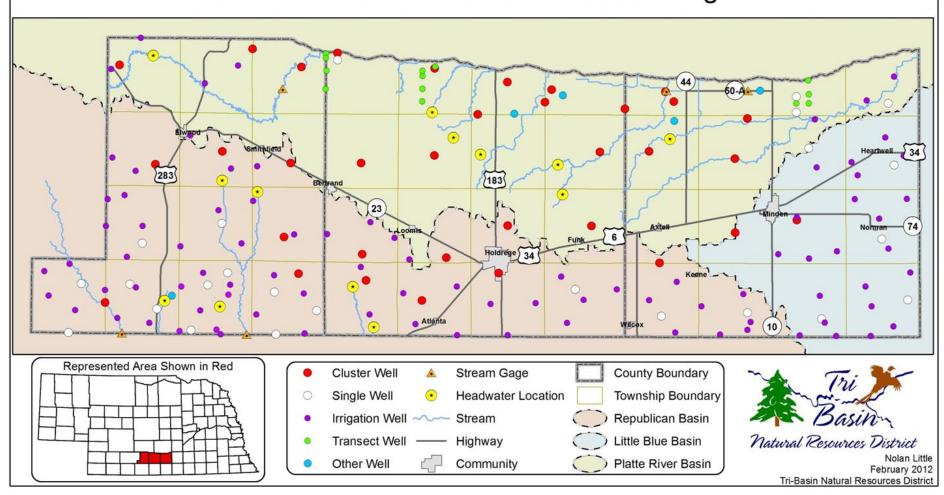


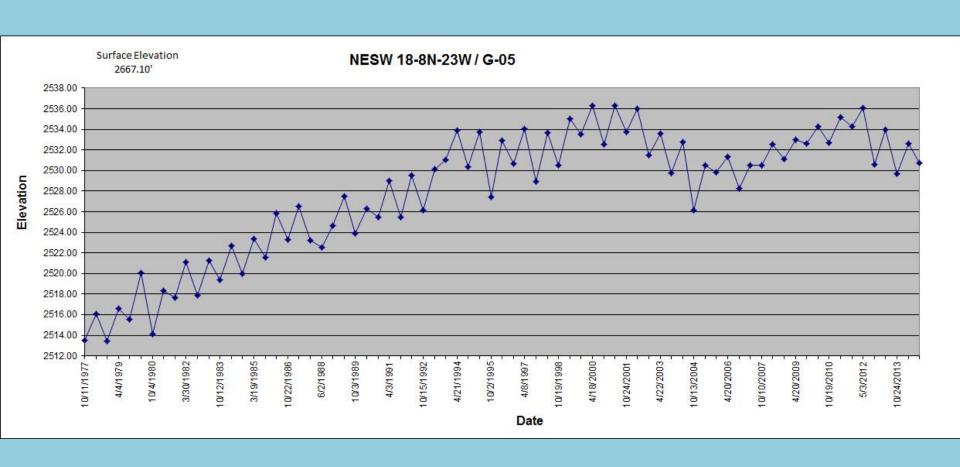
School of Natural Resources
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln

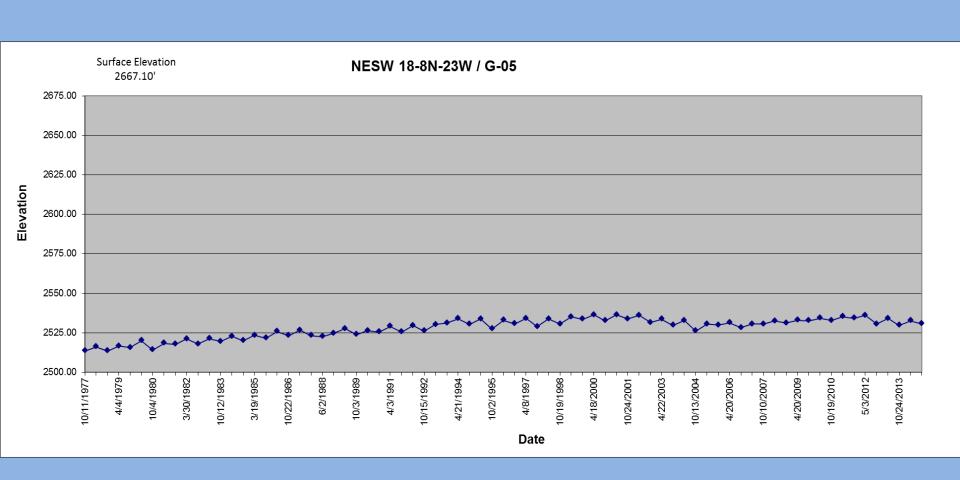
The University of Nebrasks-Lincoln does not discriminate based on gandar, age, disability, race, color, religion, maritel status, veteran's status, national or ethnic origin, or serval orientation.

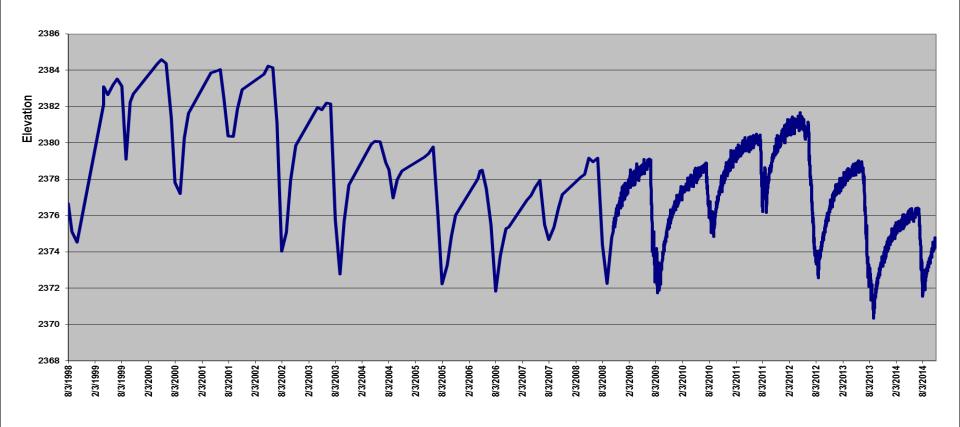
Tri-Basin Natural Resources District

Observation Well Network & Stream Gages

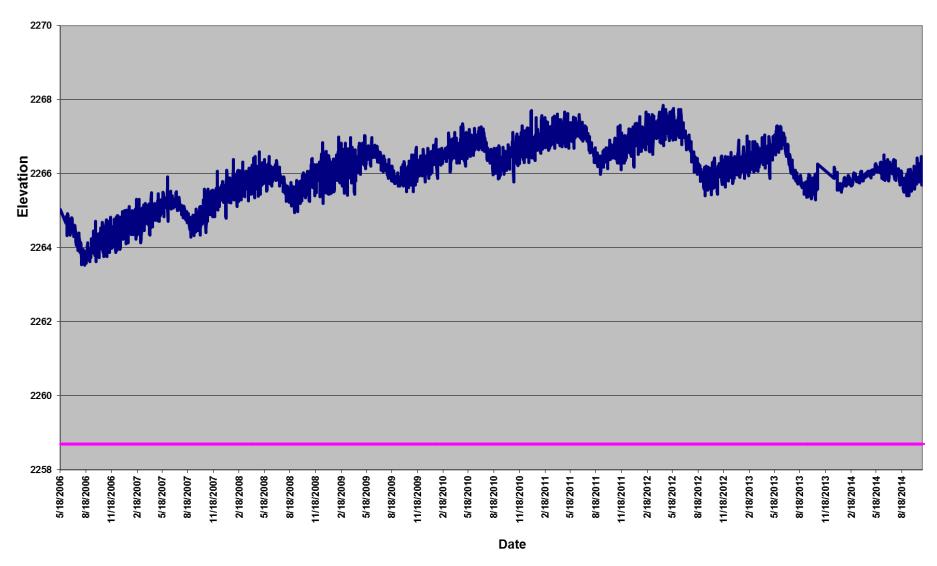




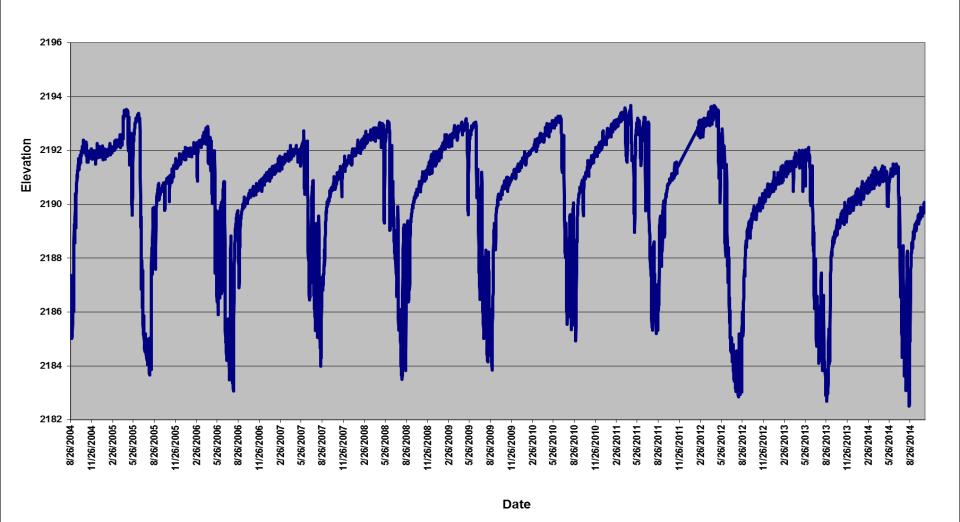




Date

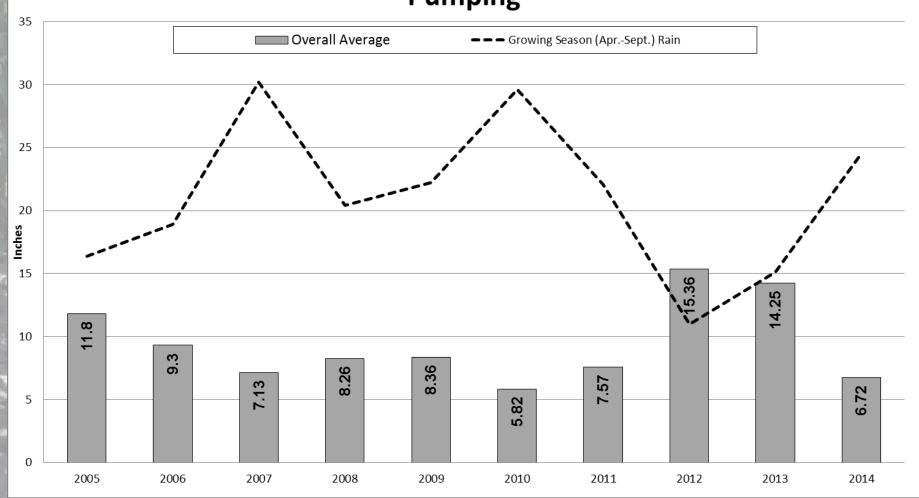


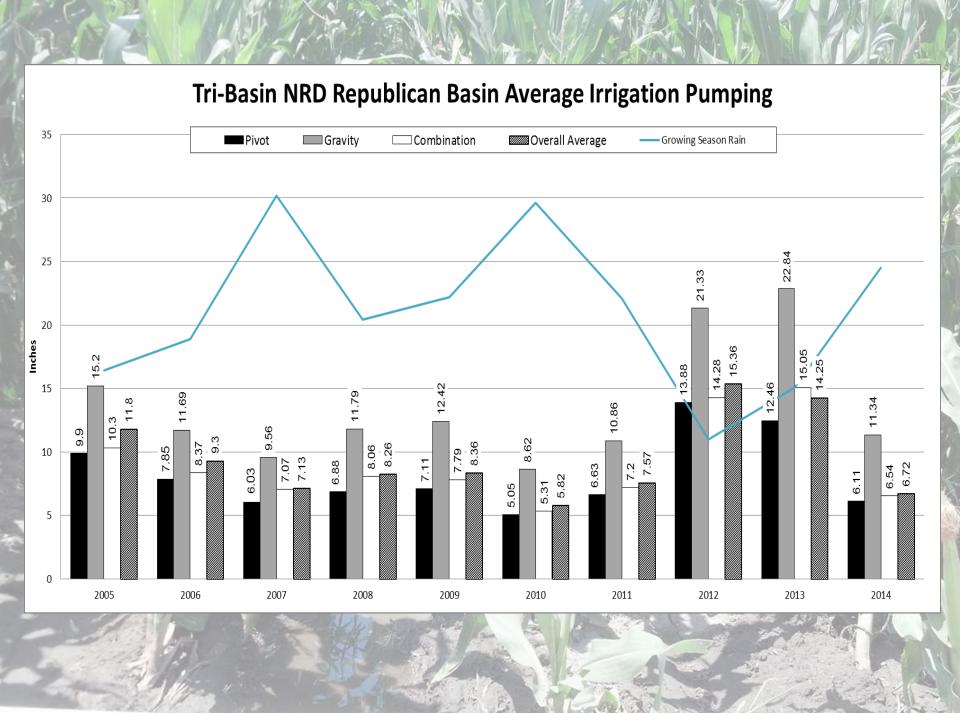
SW4 32-5N-22W G-106



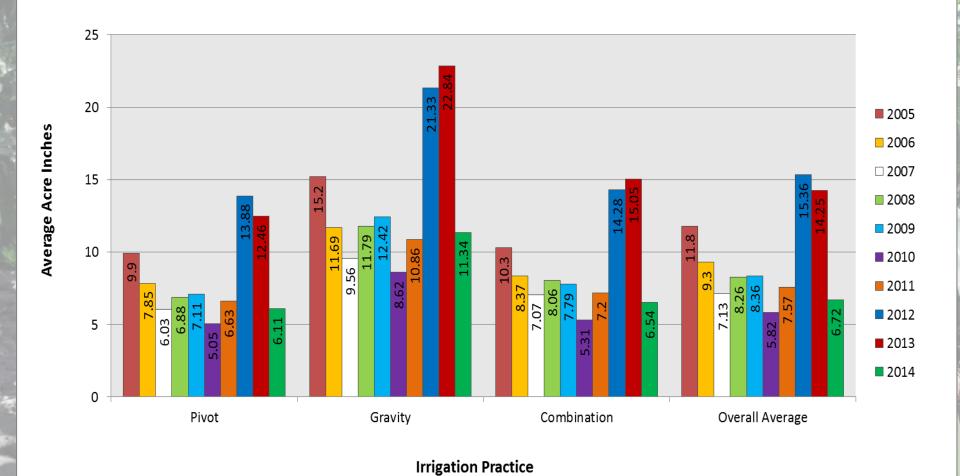
Groundwater Elevation



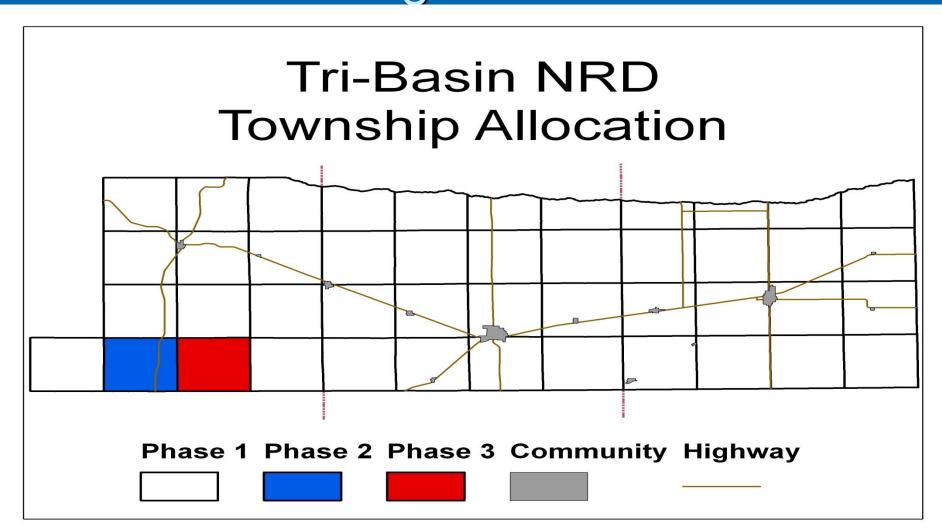




Tri-Basin NRD Republican Basin Irrigation Water Pumping



Groundwater Quantity Management Area Rules and Regulations



TBNRD regulatory actions to protect groundwater quantity

- No increase in certified irrigated acres.
- New groundwater transfers (pumping GW onto other parcels) require NRD permits.
- Supplemental wells for surface water-irrigated fields permitted only if landowner agrees to retain surface water contract for life of well.
- Flowmeters required on all wells irrigating more than 14 acres (Rep. Basin only), new and conditional replacement wells district-wide.

TBNRD regulatory actions (continued)

- Groundwater levels are protected from declines below 1981-85 average levels.
- TBNRD has designated Elk Creek township Phase 2 and Union Township Phase 3 for groundwater quantity management.
- TBNRD has limited pumping in Union
 Township in Gosper County to 27" per acre
 over three years.

Integrated water resources management

- Managing groundwater to protect streamflows.
- Required by state law (LB 962-2004)
- Also required to help Nebraska meet requirements of interstate agreements (e.g., Republican River Compact)

Integrated water resources management (continued)

- Regulation is based on meeting requirements of joint integrated management plans (IMPs) in Platte and Republican basins.
- Current Platte IMP runs through 2019.
- Current Rep. Basin IMP runs through 2021.





TBNRD regulatory actions to protect streamflows

- All groundwater-irrigated acres must be certified.
- Transfers of certified irrigated acres are regulated.
- Transfers of certified irrigated acres are pro-rated if the destination field has higher rate of stream depletion than originating field.
- Increases in water use for large commercial and industrial uses are also regulated and must be offset.
- TBNRD agrees to offset depletions to streamflows resulting from groundwater pumping as part of our IMPs.

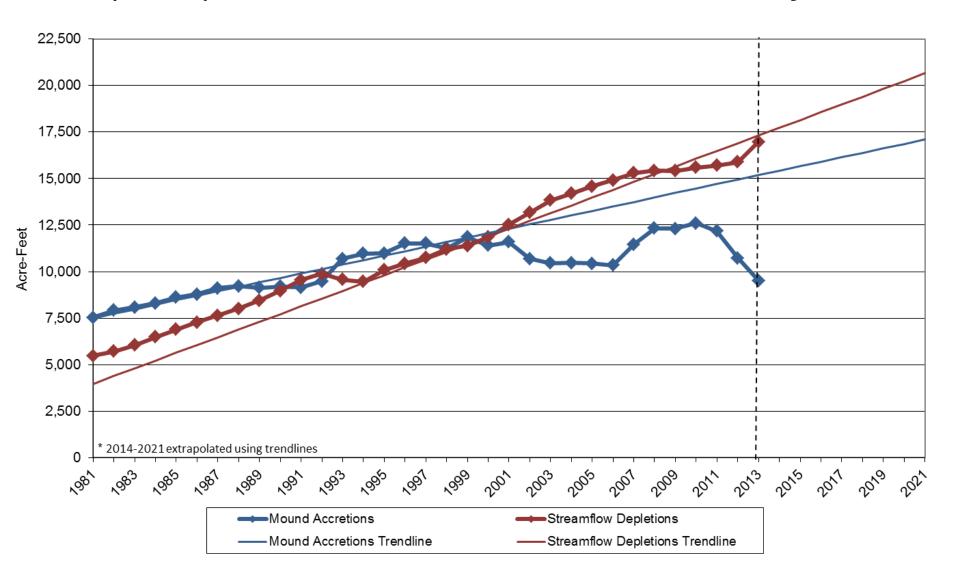
TBNRD Platte Basin IMP requirements

- TBNRD includes both overappropriated and fully appropriated portions of Platte basin.
- TBNRD IMP streamflow depletion reduction requirements to return to 1997 levels of depletions:
 - OA Basin (W of US Hwy. 183) 1775 a-f/Yr. by 2020
 - FA Basin (E of US Hwy. 183) 1760 a-f/Yr. by 2020
 - Total offset requirement= 3535 a-f/Yr. by 2020

TBNRD Republican Basin IMP Requirements

- TBNRD needs to maintain positive balance between imported water and depletions to streamflows
- TBNRD maintains this balance in three ways:
 - Maintain GW levels at or above 1981-85 levels
 - Regulate irrigated crop production
 - Augment streamflows

Tri-Basin NRD Streamflow Depletions and Imported Water (Mound) Accretions at Tri-Basin NRD Southern Boundary



Tri-Basin depletion offset projects

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Streamflow augmentation vs. Regulation

- Augmentation can be accomplished directly or indirectly.
- Direct augmentation=pumping water into a stream or releasing water from a reservoir.
- Indirect augmentation=diverting water into canals and reservoirs and allowing it to seep into the ground.

What are alternatives to augmentation?

- Pay farmers not to irrigate
 - Needed reductions can be achieved by acquiring easements
 - Easements can be acquired from willing sellers or by eminent domain (using condemnation enables targeting areas of greatest benefit)
 - NRD would need to retire irrigation on at least 50,000 acres in Platte basin and 10,000 acres in Rep. Basin
 - Cost=at least \$4000/ acre, \$24 million total

Elwood Reservoir

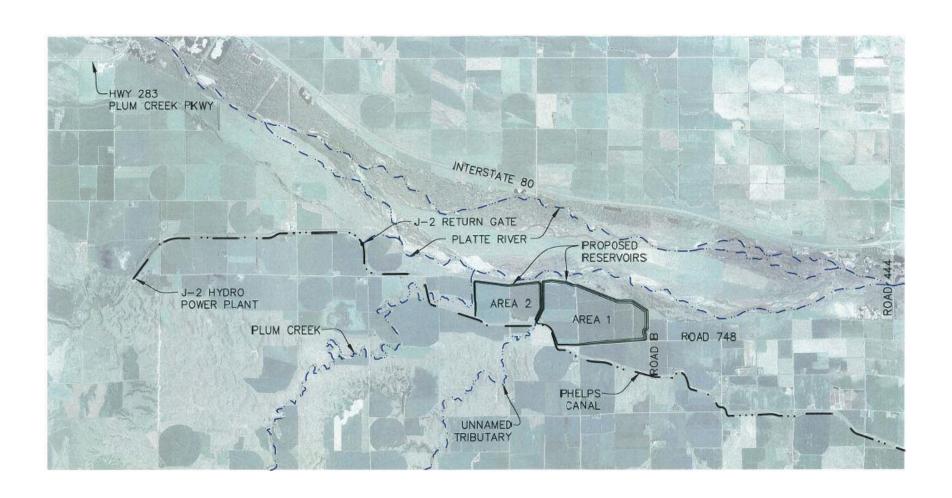




CNPPID High Flow Diversions

- TBNRD works with CNPPID to divert high Platte flows into canals, Elwood reservoir.
- Over 46,000 acre-feet diverted since first diversions in 2008.
- Over 36,000 creditable a-f at NRD cost of \$8-\$24 per a-f (DNR pays half cost).
- Diversions into Elwood Reservoir and E-65
 Canal benefit both Platte and Republican
 Basins.

J-2 Reservoirs



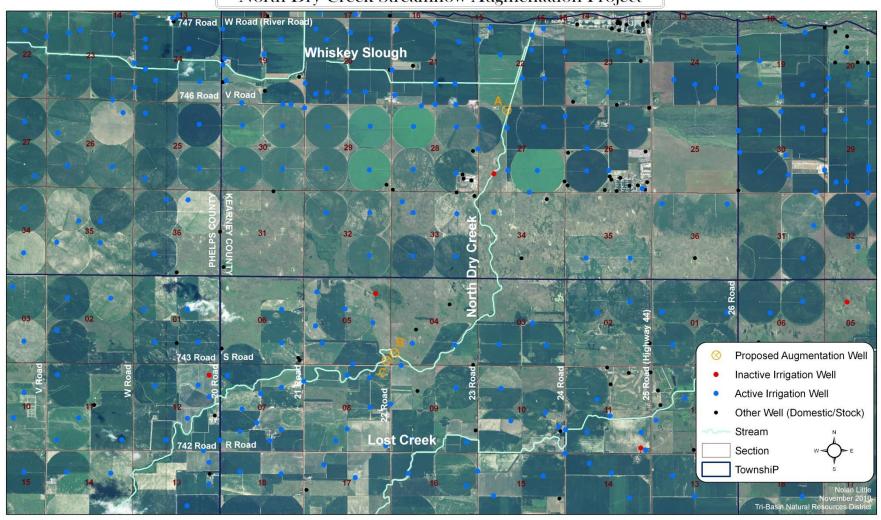
J-2 Reservoirs

- Partner in J-2 reservoirs project.
- NRD cost =\$1,571,661 over three years.
- 2000 creditable a-f per year.
- 50 year agreement.
- Cost=\$15 per creditable acre-foot.

North Dry Creek Streamflow Augmentation Project



Tri-Basin Natural Resources District North Dry Creek Streamflow Augmentation Project



North Dry Creek Streamflow Augmentation Project

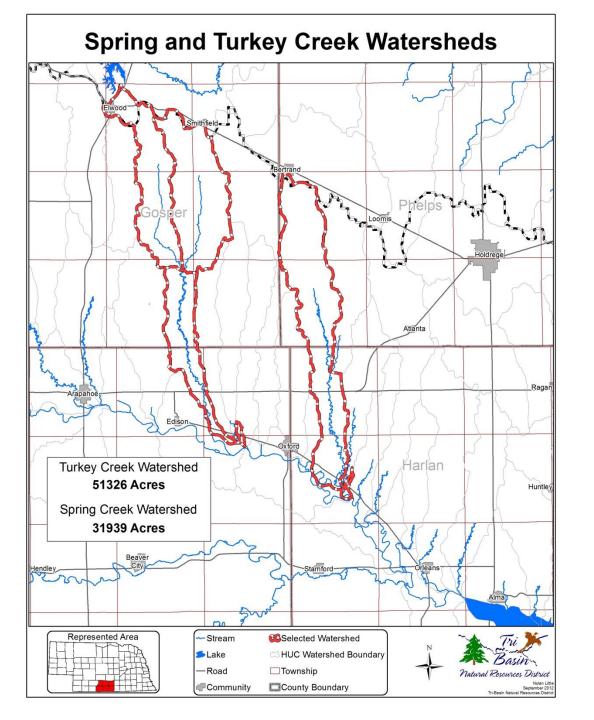
- TBNRD developed first streamflow augmentation well project in Nebraska.
- Located on North Dry Creek (Platte Trib. Near Kearney).
- First well completed in 2011, second well in 2014.
- DNR paid 50% of cost.
- Anticipate \$11-12 per creditable a-f cost.

Rep. Basin Aug. Project

- Current plan is to drill two pumping wells which will be located along Turkey Creek in Gosper County.
- Each well will be accompanied by at least one observation well.
- First observation well will be drilled this spring
- First production well will be drilled next winter (2015-16).

Rep. Basin Aug. Project (Cont.)

- A second production well is planned for 2019.
- Expected pumping rate is 1200 gpm per well.
- Expected output is 1000 acre-feet per well per year.
- Pumped water will be replaced by recharge into Elwood reservoir and E-65 canal.
- Most pumping will occur during spring and fall.
- NRD will assist with maintaining Turkey Creek in immediate vicinity of wells.



EQIP Special Initiative



USDA-EQIP Special Initiative

- Worked with USDA-NRCS on EQIP Special initiative to convert center pivot corners to grass, habitat (5-year contracts) starting in 2008.
- Total of 28 contracts (364 acres) enrolled.
- Created good upland game habitat.
- Not very effective as offset project (45 creditable a-f per year) because most corners enrolled were in low-depletion areas.